

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:)	
)	
Jaya L. Jeyaseelan et al.)	Examiner: Sheila B. Smith
)	
Serial No.: 10/675,007)	Group Art Unit: 2617
)	
Filed: September 30, 2003)	Docket: 80107.075US1
)	
For: WIRELESS NETWORK)	
ROAMING TIMER)	
METHOD AND)	
APPARATUS)	

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir or Madam:

This appeal brief is timely filed within two months of the Office's January 14, 2008 receipt of Applicants' Notice of Appeal. Applicants hereby authorize the Commissioner to charge Deposit Account 50-4238 in the amount of \$510.00 to cover the appeal brief fee. If any further fees or charges are required, the Commissioner is hereby authorized to charge them to Deposit Account 50-4238.

APPEAL BRIEF

(I). REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee, Intel Corporation.

(II). RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences to the best of Applicants' knowledge.

(III). STATUS OF THE CLAIMS

Claims 1-7 and 10-30 stand rejected by the examiner. Applicants appeal the rejection of claims 1-7 and 10-30.

(IV). STATUS OF AMENDMENTS

All amendments have been entered to the best of Applicants' knowledge.

(V). SUMMARY OF CLAIMED SUBJECT MATTER

Claims 1-7 and 10-30 are pending in the instant application. Independent claims 1, 7, and 14 are directed to methods to conditionally delay a roaming attempt by a wireless client device based on the quality of the current association between the wireless client device and an access point. Independent claim 21 is directed to a computer-readable medium having instructions stored thereon corresponding to method claim 14. Independent claim 25 (28) is directed to an apparatus (electronic system) that interacts with a wireless network, where the apparatus (electronic system) sets a timer to delay a roaming attempt based on a quality of a current association. The following summarizes the subject matter of the independent claims. None of the dependent claims are written in means-plus-function form. Thus, per 37 CFR 41.37(c)(1)(v), a separate summary of the dependent claims is not required.

A. Independent Claim 1

Independent claim 1 claims a method comprising determining a metric (e.g., # of missed beacons, % retries, current data rate, RSSI, See FIG. 3; see also p. 4, ll. 5-8) representing a quality of a current association between a wireless network client (102, FIG. 1) and an access point (110, FIG. 1); comparing the metric against a threshold (305, 315, 325, 335, 345, FIG. 3; p.

9, ll. 11-13), and setting a timer to delay a roaming attempt by the wireless network client (330, 340, 350, 360, FIG. 3; p. 7, ll. 3-7; p.3, ll. 18-27).

B. Independent Claim 7

Independent claim 7 claims a method comprising setting a timer to one of a plurality of values to delay a roaming attempt by a mobile station in a wireless network (330, 340, 350, 360, FIG. 3; p. 7, ll. 3-7); wherein the value to which the timer is set is influenced by a perceived quality of a current association (p. 9, ll. 11-16); and wherein the mobile station attempts to roam after the timer expires (p.3, ll. 18-27).

C. Independent Claims 14 and 21

Independent claim 14 claims a method (200) comprising comparing a first metric representing a quality of a current association between a wireless network client and an access point to a first threshold (210) and conditionally setting a timer to a first value (220); comparing a second metric further representing the quality of a current association between a wireless network client and an access point to a second threshold (230) and conditionally setting the timer to a second value (240); and attempting to roam after the timer expires (250). See FIG. 2; p. 4, ll. 18-30; p. 5, ll. 1-30; p. 6, ll. 1-2.

Independent claim 21 claims an apparatus (570, FIG. 5) having a medium adapted to hold machine-accessible instructions that when accessed result in a machine performing the method of independent claim 14.

D. Independent Claims 25 and 28

Independent claim 25 claims an apparatus (500) comprising a radio interface (520) to interact with a wireless network, and a processor (560) adapted to set a timer (550) based on a perceived quality of a current association and further adapted to attempt roaming when the timer expires. See FIG. 5; p. 11, ll. 4-20.

Independent claim 28 claims an electronic system including all elements of claim 25 and also including an omni-directional antenna (510) See FIG 5; p. 10, ll. 1-4.

(VI). GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The examiner rejected claims 1-7 and 10-30, of which claims 1, 7, 14, 21, 25, and 28 are independent claims, under 35 USC § 103(a) as being unpatentable over Tran (US7065063) in view of Wiedeman et al. (US6233463).

(VII). ARGUMENT

A. The Law of Obviousness

The PTO has the burden under § 103 to establish a *prima facie* case of obviousness. First, the PTO must find one or more references that teach or suggest each and every limitation of the claimed invention. Then, the PTO must show some objective teaching in the prior art, or knowledge generally available to one of ordinary skill in the art, that would motivate the skilled person to modify a reference. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52 (Fed. Cir. 2001). The mere fact that prior art can be modified to form the claimed invention does not render the claimed invention obvious unless the cited art suggests the desirability of the modification. *In re Laskowski*, 871 F.2d 115, 117 (Fed. Cir. 1989). The PTO may consider “the inferences and creative steps that a person of ordinary skill in the art would employ.” However, the PTO must provide “some articulated reasoning with some rational underpinning;” unsupported conclusory statements of obviousness are not acceptable. *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007).

B. Summary of Tran

Tran describes a “system for balancing communication traffic loading between adjacent base stations in a mobile communications network”. See the Abstract of Tran. Tran describes a

mobile station combining the received signal strength indicator (RSSI) and a traffic indicator (trafnum) of multiple base stations to arrive at adjusted signal strength indicator values (RSSI_ADJ) for multiple base stations. Base stations for which RSSI_ADJ values are maintained include the current base station and adjacent base stations. See 14, 16, FIG. 1; col. 2, line 49 to col. 3, line 4. The RSSI_ADJ values are compared to each other to decide whether to select a “roam candidate.” See 18, 20, FIG. 1; col. 3, ll. 5-14. If a roam candidate is selected, the RSSI_ADJ value of the roam candidate is compared to a threshold. If the RSSI_ADJ of the roam candidate is above the threshold, then the mobile station roams to the roam candidate. See 22, 24, FIG. 1; col. 3, ll. 15-23.

Tran also describes typically only monitoring the trafnum value for the current base station. See col. 4, ll. 35-37. Trafnum values corresponding to base stations other than the current base station are “aged over time ... such that a stored trafnum value will be reduced to zero (0) after a predetermined aging time interval”. See col. 4, ll. 44-54. The aged trafnum values are used to generate the adjusted RSSI (RSSI_ADJ) values. See col. 5, ll. 11-14.

C. Summary of Wiedeman

Wiedeman describes a dual-mode user terminal (UT 7) capable of communicating with either a satellite (8) or a terrestrial base station (BS 5). See FIG. 1; col. 4, ll. 47-50. The user terminal may be logged into one or both of the satellite and terrestrial systems in various “conditions,” (col. 6, ll. 4-18) and various mechanisms are described for automatic switching between them (col. 6, ll. 19-42). When in one initial condition “C3” (col. 6, ll. 10-12; col. 9, ll. 49-50), the user terminal periodically tests for availability of the satellite system while connected to the terrestrial system (col. 10, ll. 30-32). A timer is used to set the period between tests for availability of the satellite system (col. 10, ll. 39-41).

D. Independent claims 1, 7, 14, 21, 25, and 28 are patentably distinct from Tran and Wiedeman

1. Tran does not “disclose essentially all the claimed invention”

For each rejected claim, the examiner makes the statement that “Tran discloses essentially all the claimed invention as set fourth in the instant application” (sic). Applicants respectfully submit that this conclusory statement is not supported by any reasoning or evidence in the record, and should not be afforded any weight when considering the current claim rejections.

2. Independent Claim 1

Independent claim 1 requires that the metric compared against a threshold represents a quality of a current association between a wireless network client and an access point. The examiner takes the position that this is taught by Tran at column 3, lines 15-20. Column 3, lines 15-20 of Tran describe comparing an adjusted RSSI (RSSI_ADJ) value of a roam candidate to a threshold. The “roam candidate” of Tran is not part of the current association (col. 3, ll. 5-14), and therefore the RSSI_ADJ used in the comparison of Tran does not represent a quality of a current association as required by claim 1.

Independent claim 1 also requires “setting a timer to delay a roaming attempt by the wireless network client”. The examiner takes the position that this is taught by Tran at column 4, lines 35-51. Column 4, lines 35-51 of Tran describe the aging of trafnum values over time “such that a stored trafnum value will be reduced to zero (0) after a predetermined aging time interval”. See col. 4, ll. 44-54. The aged trafnum values are used to generate the adjusted RSSI (RSSI_ADJ) for potential roam candidates. See col. 5, ll. 11-14. The examiner appears to equate the aging of trafnum values with setting a timer to delay a roaming attempt, when in fact, the aging of trafnum values simply reduces the value of traffic indicators over time.

3. Independent Claim 7

Although independent claim 7 stands rejected, the examiner has not articulated any reasoning as to why. Accordingly, applicants believe the rejection of claim 7 should be withdrawn.

In addition, claim 7 requires “setting a timer to one of a plurality of values to delay a roaming attempt by a mobile station in a wireless network, wherein the value to which the timer is set is influenced by a perceived quality of a current association”. Neither Tran nor Weideman, taken alone or in combination, teach this limitation.

4. Independent Claims 14 and 21

Independent claims 14 and 21 recite comparing first and second metrics representing a quality of a current association between a wireless network client and an access point to first and second thresholds. Claims 14 and 21 also recite conditionally setting a timer after each comparison, and attempting to roam after the timer expires. The examiner takes the position that the first comparison is taught by Tran at column 2, lines 49-60. The examiner also takes the position that the second comparison is taught by Tran at column 3, lines 15-20. Column 2, lines 49-60 of Tran describes step 14 of method 10 (FIG. 1) in which the signal strength of a current base station and one or more adjacent base stations is measured. This portion of Tran does not describe “comparing a first metric representing a quality of a current association ... to a first threshold.” Column 3, lines 15-20 of Tran describes comparing an adjusted RSSI (RSSI_ADJ) value of a roam candidate to a threshold. The “roam candidate” of Tran is not part of the current association, and therefore the RSSI_ADJ used in the comparison of Tran does not represent a quality of a current association as required by claims 14 and 21.

The examiner also takes the position that “setting a timer for roaming attempt by a wireless network” is taught by Tran at column 4, lines 35-51. Column 4, lines 35-51 of Tran describe the aging of trafnum values over time “such that a stored trafnum value will be reduced to zero (0) after a predetermined aging time interval”. See col. 4, ll. 44-54. The aged trafnum

values are used to generate the adjusted RSSI (RSSI_ADJ) for potential roam candidates. See col. 5, ll. 11-14. The examiner appears to equate the aging of trafnum values with setting a timer to delay a roaming attempt, when in fact, the aging of trafnum values simply reduces the value of traffic indicators over time.

5. Independent Claims 25 and 28

Independent claims 25 and 28 require a processor “adapted to set a timer based on a perceived quality of a current association, and further adapted to attempt roaming when the timer expires.” The examiner takes the position that this is taught by Tran at column 2, lines 7-32. Column 2, lines 7-32 of Tran provide a summary. The summary of Tran describes a processing device coupled to a storage device to store trafnum values for adjacent base stations. See col. 2, ll. 20-22. The summary of Tran also describes adjusting RSSI values (col. 3, ll. 22-28) and comparing adjusted RSSI values (col. 3, ll. 28-32). Tran does not describe a processor “adapted to set a timer based on a perceived quality of a current association, and further adapted to attempt roaming when the timer expires.”

E. The dependent claims depend from an allowable independent claim

Claims 2-6, all depend from claim 1. Claims 10-13 all depend from claim 7. Claims 15-20 all depend from claim 14. Claims 22-24 all depend from claim 21. Claims 26 and 27 depend on claim 25. Claims 29 and 30 depend from claim 28. Thus, the dependent claims are allowable for the same reasons given above.

F. Dependent claims 2-6, 10-13, 15-20, 22-24, 26, 27, 29 add patentably distinct limitations to their corresponding independent claims

1. Tran does not disclose comparing a received signal strength indicator representing a quality of a current association to a threshold as required by claim 2

The examiner takes the position that Tran teaches the limitations of claim 2 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a received signal strength indicator representing a quality of a current association to a threshold as required by claim 2.

2. Tran does not disclose comparing a current data rate representing a quality of a current association to a threshold as required by claim 3

The examiner takes the position that Tran teaches the limitations of claim 3 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a current data rate representing a quality of a current association to a threshold as required by claim 3.

3. Tran does not disclose comparing a number of packet retries representing a quality of a current association to a threshold as required by claim 4

The examiner takes the position that Tran teaches the limitations of claim 4 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a number of packet retries representing a quality of a current association to a threshold as required by claim 4.

4. Tran does not disclose comparing a plurality of metrics representing a quality of a current association to a plurality of thresholds as required by claim 5

The examiner takes the position that Tran teaches the limitations of claim 5 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a plurality of metrics representing a quality of a current association to a plurality of thresholds as required by claim 5.

5. Tran does not disclose comparing a received signal strength indicator representing a quality of a current association to a threshold that is dependent on a current data rate as required by claim 6

The examiner takes the position that Tran teaches the limitations of claim 6 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a received signal strength indicator representing a quality of a current association to a threshold that is dependent on a current data rate as required by claim 6.

6. Tran does not disclose setting the timer to a value that is relatively low when the perceived quality of the current association is relatively low as required by claim 10

The examiner takes the position that Tran teaches the limitations of claim 10 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe setting a timer to a value that is relatively low when the perceived quality of the current association is relatively low as required by claim 10.

7. Tran does not disclose setting the timer to a value that is relatively high when the perceived quality of the current association is relatively high as required by claim 11

The examiner takes the position that Tran teaches the limitations of claim 11 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe setting a timer to a value that is relatively high when the perceived quality of the current association is relatively high as required by claim 11.

8. Tran does not disclose setting a hardware timer to one of a plurality of values to delay a roaming attempt as required by claims 12, 26, and 29

The examiner takes the position that Tran teaches the limitations of claims 12, 26, and 29 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe setting a hardware timer to one of a plurality of values to delay a roaming attempt as required by claims 12, 26, and 29.

9. Tran does not disclose setting a software timer to one of a plurality of values to delay a roaming attempt as required by claims 13, 27, and 30

The examiner takes the position that Tran teaches the limitations of claims 13, 27, and 30 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe setting a software timer to one of a plurality of values to delay a roaming attempt as required by claim 13, 27, and 30.

10. Tran does not disclose comparing a data rate representing a quality of a current association between a wireless network client and an access point to a first threshold and conditionally setting a timer to a first value as required by claims 15 and 22

The examiner takes the position that Tran teaches the limitations of claims 15 and 22 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a data rate representing a quality of a current association between a wireless network client and an access point to a first threshold and conditionally setting a timer to a first value as required by claims 15 and 22.

11. Tran does not disclose comparing a data rate representing a quality of a current association between a wireless network client and an access point to a lowest possible data rate and conditionally setting a timer to a first value as required by claims 16 and 23

The examiner takes the position that Tran teaches the limitations of claims 16 and 23 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a data rate representing a quality of a current association between a wireless network client and an access point to a lowest possible data rate and conditionally setting a timer to a first value as required by claims 16 and 23.

12. Tran does not disclose comparing a received signal strength indicator representing a quality of a current association between a wireless network client and an access point to a second threshold and conditionally setting a timer to a second value as required by claims 17 and 24

The examiner takes the position that Tran teaches the limitations of claims 17 and 24 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a received signal strength indicator representing a quality of a current association between a wireless network client and an access point to a second threshold and conditionally setting a timer to a second value as required by claims 17 and 24.

13. Tran does not disclose comparing a received signal strength indicator representing a quality of a current association between a wireless network client and an access point to a second threshold that is dependent on the current data rate and conditionally setting a timer to a second value as required by claim 18

The examiner takes the position that Tran teaches the limitations of claim 18 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a received signal strength indicator representing a quality of a current association between a wireless network client and an access point to a second threshold that is dependent on the current data rate and conditionally setting a timer to a second value as required by claim 18.

14. Tran does not disclose setting the timer to a second value that is larger than the first value as required by claim 19

The examiner takes the position that Tran teaches the limitations of claim 19 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each

other (col. 2, ll. 28-32), but does not describe setting the timer to a second value that is larger than the first value as required by claim 19.

15. Tran does not disclose comparing a percentage of missed beacons to a threshold and conditionally attempting to roam in response as required by claim 20

The examiner takes the position that Tran teaches the limitations of claim 20 at column 2, lines 7-32. This portion of Tran describes comparing different signal strength indicators to each other (col. 2, ll. 28-32), but does not describe comparing a percentage of missed beacons to a threshold and conditionally attempting to roam in response as required by claim 20.

G. Conclusion

For the foregoing reasons, it is respectfully urged that the claims as presently presented are allowable over the references of record, and notice of allowance is therefore respectfully requested.

(VIII). CLAIMS APPENDIX

1. A method comprising:
determining a metric representing a quality of a current association between a wireless network client and an access point;
comparing the metric against a threshold; and
setting a timer to delay a roaming attempt by the wireless network client.
2. The method of claim 1 wherein the metric comprises a received signal strength indicator.
3. The method of claim 1 wherein the metric comprises a current data rate.
4. The method of claim 1 wherein the metric comprises a number of packet retries.
5. The method of claim 1 further comprising comparing a plurality of metrics against a plurality of thresholds, and setting the timer in response.
6. The method of claim 1 wherein the metric comprises a received signal strength indicator, and the threshold is dependent on the current data rate.
7. A method comprising setting a timer to one of a plurality of values to delay a roaming attempt by a mobile station in a wireless network, wherein the value to which the timer is set is influenced by a perceived quality of a current association, and wherein the mobile station attempts to roam after the timer expires.
- 8-9. (Canceled)

10. The method of claim 7 wherein when the perceived quality of the current association is relatively low, the timer is set to a value that is relatively low.
11. The method of claim 7 wherein when the perceived quality of the current association is relatively high, the timer is set to a value that is relatively high.
12. The method of claim 7 wherein setting a timer comprises setting a hardware timer.
13. The method of claim 7 wherein setting a timer comprises setting a software timer.
14. A method comprising:
 - comparing a first metric representing a quality of a current association between a wireless network client and an access point to a first threshold and conditionally setting a timer to a first value;
 - comparing a second metric further representing the quality of a current association between a wireless network client and an access point to a second threshold and conditionally setting the timer to a second value; and
 - attempting to roam when the timer expires.
15. The method of claim 14 wherein the first metric comprises a data rate.
16. The method of claim 15 wherein the first threshold corresponds to the lowest possible data rate.
17. The method of claim 15 wherein the second metric comprises a received signal strength indicator.

18. The method of claim 17 wherein the second threshold is dependent on the current data rate.
19. The method of claim 17 wherein the second value is larger than the first value.
20. The method of claim 14 further comprising comparing a percentage of missed beacons to a threshold, and conditionally attempting to roam in response.
21. An apparatus including a medium adapted to hold machine-accessible instructions that when accessed result in a machine performing:
 - comparing a first metric representing a quality of a current association between a wireless network client and an access point to a first threshold and conditionally setting a timer to a first value;
 - comparing a second metric further representing the quality of a current association between a wireless network client and an access point to a second threshold and conditionally setting the timer to a second value; and
 - attempting to roam when the timer expires.
22. The apparatus of claim 21 wherein the first metric comprises a data rate.
23. The apparatus of claim 22 wherein the first threshold corresponds to the lowest possible data rate.
24. The apparatus of claim 22 wherein the second metric comprises a received signal strength indicator.
25. An apparatus comprising:

a radio interface to interact with a wireless network; and
a processor coupled to the radio interface, wherein the processor is adapted to set a timer based on a perceived quality of a current association, and further adapted to attempt roaming when the timer expires.

26. The apparatus of claim 25 wherein the timer is at least partially implemented in hardware.

27. The apparatus of claim 25 wherein the timer is at least partially implemented in software.

28. An electronic system comprising:
an omni-directional antenna;
a radio interface coupled to the omni-directional antenna to interact with a wireless network; and
a processor coupled to the radio interface, wherein the processor is adapted to set a timer based on a perceived quality of a current association, and further configured to attempt roaming when the timer expires.

29. The electronic system of claim 28 wherein the timer is at least partially implemented in hardware.

30. The electronic system of claim 28 wherein the timer is at least partially implemented in software.

(IX). EVIDENCE APPENDIX

None.

(X). RELATED PROCEEDINGS APPENDIX

None.

Respectfully submitted,
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